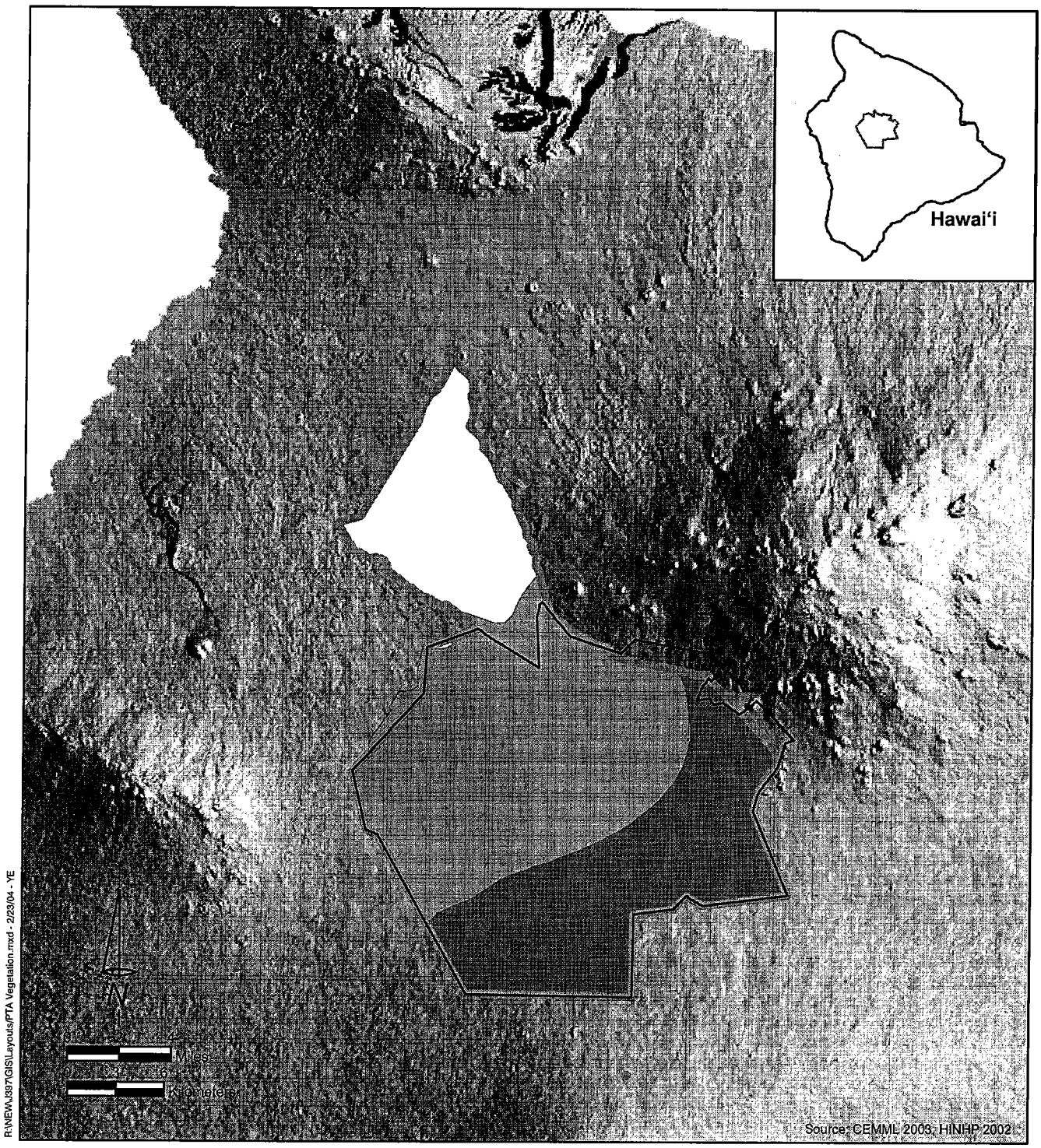
Exhibit “B”
Part 8 of 10



The twenty eight sub-groups of vegetation communities occur within the main types identified here.

Legend

- Pōhakuloa Training Area Boundary
- Region of Influence

COMMUNITY

- Montane Dry Forest & Shrubland
- Nonnative
- Subalpine Dry Forest & Shrubland

Vegetation Communities at the Pōhakuloa Training Area Terrestrial Biological Region of Influence

Island of Hawai'i, Hawai'i

Figure 8-33

0052227

Exhibit "B"
Part 8 of 10

There are three types of *Dodonaea* shrubland: open, dense, and mixed. ʻAʻaliʻi *(Dodonaea viscosa)* is the dominant plant in each community, along with other native species, including ʻilima *(Sida fallax),* ʻāheahea *(Chenopodium oahuense),* and naio. Fountain grass is invading all of these communities.

Leptecophylla occurs either as a mixed shrubland community or as a component of *Leptecophylla-Dodonaea* shrubland. No rare plants are associated with these communities, though natives like *Leptecophylla tameiameiae*, naio, ʻaʻaliʻi, and *Sophora chrysophylla* are common.

Chamaesyce treeland is generally found hosting native species of *Chamaesyce olowaluana* (a species of concern), ʻilima, ʻāheahea, and ʻaʻaliʻi. *Chenopodium* shrubland and *Eragrostis aptopioides* grassland are similar communities with different dominant species. ʻĀheahea occurs sparsely as shrubs in the grassland, and *Eragrostis aptopioides* is the dominant native grass in the shrubland.

The remainder of the native natural communities is a combination of *Chamaesyce, Myoporum,* and *Sophora* species, with divisions based on the densities of species.

Kīpuka Kalawamauna Endangered Plants Habitat encompasses 7,869 acres (3,185 hectares) in the northwestern area of PTA. The endangered plants documented there are *Haplostachys haplostachya, Stenogyne angustifolia, Asplenium fragile* var. *insulare, Hedyotis coriacea, Silene lanceolata, Tetramoloipum arenarium* var. *arenarium,* and *Zanthoxylum hawaiiense.* Much of the area is fenced and allows limited vehicle access.

The Kīpuka ʻAlalā fenced unit is approximately 5,000 acres (2,023 hectares) and includes the former Multi-Purpose Range Complex in Training Area 23. Training in this area is restricted to small-scale dismounted maneuvers, but it has never been used (Gleason 2003). No SBCT training is planned for the 1,500 acres (607 hectares) containing the MPRC, though dismounted maneuver training would occur at the remaining sections Training Area 23. Rare species in this management area are *Hedyotis coriacea, Stenogyne angustifolia, Silene hawaiiensis, Zanthoxylum hawaiiense, Chamaesyce olowaluana, Hesperocnide sandwicensis, Tetramolopium humile* var. *sublaeve,* and *Haplostachys haplostachya.*

Other special status areas within the training area include palila critical habitat and emergency exclosures for individual or small groups of rare plants. Emergency exclosures currently protect *Hedyotis coriacea, Neraudia ovata, Portulaca sclerocarpa, Schidea hawaiiensis, Silene lanceolata, Solanum incompletum, Tetramolopium arenarium* var. *arenarium,* and *Zanthoxylun hawaiiense.*

West PTA Acquisition Area

Adjacent to the northwest corner of PTA is the 22,675-acre (9,176-hectare) WPAA. Biological surveys in spring 2002 and 2003 (Palmer 2003) showed federally listed endangered plant species within the ROI: *Isodendrion hosake, Lipochaeta venosa, Haplostachys haplostachya, Stenogyne angustifolia,* and *Vigna o-wahuensis.* The plant communities are similar to those within PTA and include native and nonnative dominated shrublands and drainages of varying density and composition. Fountain grass is the dominant member of several grassland communities that can include a proportion of native shrubs, herbs, and trees. The highly

disturbed communities are identified as *Eucalyptus* woodlots, nonnative forb lands, and pastureland, all of which contain native plants scattered through the area. No critical habitat for plants occurs within this portion of the ROI but Palmer (2003) noted several Significant Botanical Sites within the boundary at pu'u Nohona o Hae and pu'u Papapa. These significant areas support native vegetation communities that support numerous endangered species. There are no documented aquatic natural communities on PTA.

The Army seeks to preserve and stabilize the populations of federally listed plants on lands under their management. The Endangered Species Management program and the installation pest management activities combine and reduce the negative impacts of introduced species on the landscape (USARHAW and 25th ID[L] 2001a). Control of noxious weeds is required by the State of Hawai'i Noxious Weed Rules (USDA, no date) and is supported by AR 200-5, *Pest Management* (HQDA 1999).

PTA has federal and state listed noxious weeds. Though kikuyu grass *(Pennisetum clandestinum)* is included in this category, it is exceptional at PTA and is not invasive at high elevation dry ecosystems (Gleason 2003). Invasive and noxious weeds that are targeted for control on PTA include banana poka *(Passiflora mollissima),* Fountain grass (*Pennisetum setaceum)* and Russian thistle *(Salsola kali).* Other widespread weed species are controlled where they threaten native plants and communities.

Native plants are directly affected by populations of feral pigs *(Sus scrofa),* goats *(Capra hircus),* sheep *(Ovis aries),* and mouflon *(O. musimon),* which contribute to numerous ecological problems (Atlas 1998). The effects of these wild animals include trampled and grazed native plants and advanced erosion (HIHNP 1994). Browsing and otherwise destroying the native vegetation encourages nonnative plants to become established, severely affecting the habitat for native plants (Atlas 1998). Shooting of game mammals was suspended in 2000 and replaced with non lethal control efforts. Often areas are fenced and the individual animals lured out through one-way gates. Live-trapping is also used. These animals are then tagged and re-located to hunting areas. Aerial driving of sheep and goats was deemed largely unsuccessful as a removal method (USARHAW and 25th ID(L) 2001b).

Rats *(Rattus rattus* and *R. exulans hawaiiensis)* also are known to eat the fruit from certain species of native plants, seriously affecting the plants' reproduction (Atlas 1998; Shaw 1997; PCSU 2001, 87). An additional concern with rats on PTA is that they could eat newly found native snail populations. Proposed measures to control rats, cats and other small vertebrates include baiting and trapping (USARHAW and 25th ID(L) 2001b).

Human habitat disturbance on PTA includes disturbance by military training and construction activities. Trampling and dust associated with training activities could also adversely affect populations of rare plants and communities (Shaw 1997). Fire threat is high on PTA. Many of the native plant communities are interspersed with highly flammable introduced species. Additionally, the rugged terrain and vastness of the training area limit access for fire suppression and control. The Army has SOPs that reduce the potential for fire from training at PTA and on the lands leased from the neighboring ranch. The SOPs for the

leased lands prohibit smoking and ensure vehicle traffic is confined as much as possible to roads and trails.

In 1989, PTA was the first Army location in Hawai'i to implement the LCTA component of the ITAM program (described in Chapter 2, Section 2.2.4). Through this program and the other ITAM components, PTA has developed a GIS database that includes data on landing zones, impact areas, firing points, soils, vegetation, and firebreaks, just to name a few. This information supports LCTA land use planning and decision-making and is instrumental in prioritizing potential LRAM projects. The SRA component of ITAM educates the troops and provides installation-specific guidance for maneuvers at PTA as some areas of PTA have significant restrictions on training.

Wildlife

Zoological field surveys that have been made on PTA include those by Shallenberger (1977), David (1995), and Freed (1991). More recent surveys targeting native rare invertebrates, mammals, and birds were also conducted (Gon et al. 1993; HINHP 1998; USARHAW and 25th ID[L] 2001b), as were entomology surveys of the PTA lava tubes (Garcia and Associates 2003). There have been no specific reptile surveys on PTA because there are no native terrestrial reptiles and amphibians on the Hawaiian Islands. Surveys of PTA were made by the University of Hawai'i, the Bishop Museum Hawaiian Heritage Program, and the HINHP (1994), which are cited in the following section. These natural resource surveys have been used for the resource assessments in the *Biological Inventory and Management Assessment on the PTA for USARHAW* (HINHP 1994a), as well as the more recent PTA INRMP (USARHAW and 25th ID[L] 2001b). The following section describes the general presence of invertebrate, mammal, bird, and fish species.

Invertebrates

Native and endemic invertebrates on PTA include the Hawaiian helicoverpa moth (*Helicoverpa confusa)* and the Giffards rhyncogonus weevil (*Rhyncogonus giffardi*). Snails documented at PTA are *Letachatina* spp., *Euconulus gaetanoi*, *Nesopupa subcentralis*, *Nesovitrea hawaiiensis*, *Striatura* spp., and *Vitrina tenella.* The helicarionid land snail *(Philonesia* spp.*)* and succineid land snail *(Succinea konaensis)* were also observed on PTA (HINHP 1994; R. M. Towill Corp. 1997b; USARHAW and 25th ID[L] 2001b). Three endemic caterpillar species, *Schrankia* sp., were noted during recent surveys for native invertebrates at PTA lava tubes (Ganda 2003).

Surveys of PTA by HHP in 1993 detected the following nonnative snails: giant African snail *(Achatina fulica),* bradybaenid land snail *(Bradybaena similaris),* cannibal snail *(Euglandina rosea),* and the zonitid land snail *(Hawaiia minuscula).* Humans have purposely or accidentally introduced these species to the island of Hawai'i. They now threaten the native snail species through competition for resources, predation, and the spread of disease (PCSU 1999, 155).

Amphibians

There are no native terrestrial amphibians on the Hawaiian Islands. Nonnative amphibians found on the island of Hawai'i include bullfrog *(Rana catesbeiana),* wrinkled frog *(R. rugosa),* giant toad *(Bufo marinus),* and Cuban tree frog *(Osteopilus septentrionalis).* These species were

introduced into Hawai'i from other countries and have inhabited areas where adequate aquatic habitat and surrounding vegetation exist. While these species have not been documented in PTA, they could occur in the general PTA ROI, which includes the proposed PTA Trail.

Reptiles

There are no native terrestrial reptiles on the Hawaiian Islands. Nonnative reptiles found on the island of Hawai'i include the green anole *(Anolis carolinenesis),* mourning gecko *(Lepidodactylus lugubris),* stump-toed gecko *(Gehyra mutilata),* tree gecko *(Hemiphyllodactylus typus),* Indo-Pacific gecko *(Hemidactylus garnotii),* house gecko *(H. frenatus),* metallic skink *(Lampropholis delicata),* and gold dust day gecko *(Phelsuma laticauda laticauda).* The only known terrestrial snake occurring on the Hawaiian Islands is the island blind snake *(Ramphotyphlops braminus).* While these species have not been documented in PTA, they could occur in the general PTA ROI, which includes the proposed PTA Trail.

Terrestrial Mammals

The Hawaiian hoary bat *(Lasiurus cinereus semotus)* is known to_occur on PTA (USARHAW and 25th ID[L] 2001b; Cooper et al. 1996). It is the only native terrestrial mammal in the Hawaiian Islands. The following nonnative species have been documented as occurring on PTA: feral pig *(Sus scrofa scrofa),* feral goat *(Capra hircus hircus),* feral cat *(Felis catus),* feral dog *(Canis familiaris),* Norway rat *(Rattus norvegicus),* black rat *(R. rattus),* feral sheep *(Ovis aries),* mouflon sheep *(O. musimon),* mongoose *(Herpestes auropunctatus),* and house mouse *(Mus musculus).* The Polynesian rat *(Rattus exulans hawaiiensis)* may occur in the ROI. Cows *(Bos taurus)* presently graze in the Keamuku Parcel.

Birds

Endemic species fairly common to PTA are 'apapane *(Himatone sanguines)* and Hawaiian 'amakihi *(Hemignathus virens virens).* Endemic species with declining populations less common to but identified on PTA are 'i'iwi *(Vestiaria coccinea),* 'elepaio *(Chasiempis sandwichensis s.),* and 'ōma'o *(Myadestes obscurus)* (USARHAW and 25th ID[L] 2001b). The dark-rumped petrel *(Pterodroma phaeopygia sandwichensis)* is a federally listed endangered species known to occur on PTA. Nonnative bird species known to occur on PTA include Erchel's francolin *(Francolinus erckelii),* black francolin *(F. francolinus),* California quail *(Callipepla californica),* and Japanese quail *(Coturnix japonica).* The house finch *(Carpodacus mexianus)* and Eurasian sparrow *(Paser domesticus)* are also species that have been introduced by humans on the island of Hawai'i.

Fish

No natural aquatic systems occur on PTA (USARHAW and 25th ID[L] 2001b). Although Waiulaula Gulch and Makeahua Stream cross the proposed PTA Trail alignment, no fish data is available for the PTA ROI.

Marine Biological Resources

The marine portion of the PTA ROI is shown in Figures 8-32 and 3-13. The nearshore and offshore Pacific waters between O'ahu and the island of Hawai'i, the Pearl Harbor area of O'ahu, the Kawaihae Harbor area of the island of Hawai'i, and coastlines adjacent to the harbors are included in the ROI. As part of the Proposed Action, there would be a slight

increase in vessel transit activity between O'ahu and the island of Hawai'i. Boats would launch from Pearl Harbor with troops and equipment and would land at Kawaihae Harbor, and then return at the end of the training action. The 25th ID(L) units would offload and transit from Kawaihae Harbor to PTA. Some of the transit areas for the vessels between the two islands are within or in close proximity to the Hawaiian Islands Humpback Whale National Marine Sanctuary waters (composed of five separate areas abutting six of the major islands; see Figure 3-13). Designated sanctuary waters encompass the entire western portion of the island of Hawai'i and include waters just outside and surrounding Kawaihae Harbor. Designated sanctuary waters also occur outside of O'ahu at Penguin Banks which would be part of the transit route for crew-transporting vessels. Any adjacent coastline areas in the ROI may provide shore habitat for some marine wildlife, such as sea turtles and monk seals.

There is a coral reef area of management concern (known as a "hot spot") in the PTA ROI. Located at Kawaihae Harbor, this reef is identified as at risk both from extensive development at the commercial harbor and from recent and continued development at the small boat harbor. While the main issue affecting this reef is harbor construction, other causes of decline for this reef system include interruption of long-shore transport due to harbor development, consequent siltation of Pelekane Bay, and close proximity to important cultural sites (i.e. Pu'u Kohola Heiau) that causes increased recreational use and human presence (CRAMP 2003). Any harbor construction impacts would be addressed in a separate NEPA document. In addition to this reef identified as a management concern, there are other coral reefs in the coastal waters of the PTA ROI. One that is well known is Puako reef, approximately 8 to 10 miles (13 to 16 kilometers) from Kawaihae Harbor. There are no coral reef areas of management concern outside Pearl Harbor on O'ahu (CRAMP 2003).

Marine wildlife occurs in the PTA ROI in both the nearshore and offshore regions of Pacific waters. The harbor areas and adjacent coastline areas also provide habitat for marine wildlife. Kawaihae Harbor is on the leeward side of the island where waters are calmer and more protected. These waters provide good habitat for humpback mother and calf pods and for resting dolphin pods as well as sea turtles, potentially monk seals, and other marine wildlife.

Distributions and abundance of marine mammals and sea turtles in Pacific waters vary seasonally and spatially; that is, numbers and types of animals may vary in the nearshore versus offshore regions, as well as by the time of year (Calambokidis et al. 1997; Leatherwood et al. 1982; Mobley et al. 1999, 2000; NMFS 2000a-2000bb). Many marine mammal species occur year-round in Pacific waters. All marine mammal species are protected under the MMPA, regardless of whether they have additional protection under the ESA. Informal consultation with NOAA Fisheries has been initiated for marine mammals in the SBCT ROI. Both MMPA and ESA protected marine wildlife species that may occur in the PTA ROI either seasonally, permanently, or as transients, are listed in Table 8-19.

Table 8-19
Sensitive Marine Wildlife Occurring or Potentially Occurring in Waters of PTA ROI

Scientific Name	Common Name	[1]Federal Status	[2]State Status	Habitat	Date Last Observed	Likelihood of Occurrence	Notes
Cetaceans and Pinnipeds							
Balaenoptera acutorostrata	Minke whale	*	-	May occur in nearshore or offshore waters	Known Currently	P	Most common northwest of the main seven-island chain or on leeward side of islands. May be incidentally sighted in waters adjacent to or between O'ahu and Hawai'i.
B. Borealis	Sei Whale	E*	-	Most likely in deeper offshore waters	Known currently	U	Rarely sighted in Hawaiian waters.
B. edeni	Bryde's whale	*	-	May occur in nearshore or offshore waters	Known Currently	P	Most common northwest of the main seven-island chain. May be incidentally sighted in waters adjacent to or between O'ahu and Hawai'i.
B. musculus	Blue whale	E*	-	Most likely in deeper offshore waters	Known currently	U	Heard in Hawaiian waters.
B. physalus	Fin whale	E*	-	Most likely in deeper offshore waters	Known currently	U	Heard but rarely sighted in Hawaiian waters.
Berardius bairdii	Baird's beaked whale	*	-	Most likely in deeper offshore waters	Known Currently	P	Expected to occur as transients in waters of the PTA ROI.
Delphinus Delphis	Common dolphin	*	-	Most likely in deeper offshore waters	Known Currently	U	May be incidentally sighted in waters between O'ahu and Hawai'i.
Eubalaena glacialis	Pacific right whale	E*	-	Unknown if depth is a criteria	Known currently	U	Most likely stray individuals from more northern population.
Feresa attenuate	Pygmy killer whales	*	-	May occur in nearshore or offshore waters	Known Currently	C	Known in the channels between the main islands. Has been documented off the coast of O'ahu. May occur in waters adjacent to or between O'ahu and Hawai'i.
Globicephala macrorhynchus	Short-finned pilot whale	*	-	May occur in nearshore or offshore waters	Known Currently	C	Known in the channels between the main islands. Common in nearshore or offshore areas in waters adjacent to or between O'ahu and Hawai'i.
Grampus griseus	Risso's dolphin	*	-	Most likely in deeper offshore waters	Known Currently	P	Most commonly sighted in offshore waters. May be seen in offshore areas in waters adjacent to or between O'ahu and Hawai'i.
Kogia breviceps	Pygmy sperm whale	*	-	Most likely in deeper offshore waters	Known Currently	P	Prefers deeper waters but occasionally seen in the channels between the main islands. May be seen in offshore waters between O'ahu and Hawai'i.

Table 8-19
Sensitive Marine Wildlife Occurring or Potentially Occurring in Waters of PTA ROI *(continued)*

Scientific Name	Common Name	[1]Federal Status	[2]State Status	Habitat	Date Last Observed	Likelihood of Occurrence	Notes
K. simus	Dwarf sperm whale	*	-	Most likely in deeper offshore waters	Known Currently	P	Prefers deeper waters but occasionally seen in the channels between the main islands. May be seen in offshore areas in waters adjacent to or between O'ahu and Hawai'i.
Monachus schauinslandi	Monk seal	E*, CH, D	-	More common in nearshore waters or hauled out on the coast.	Known currently	C	Most common northwest of the main seven-island chain. Incidental individuals known to haul out along main seven island shorelines. Anecdotal sighting on Kawaihae Beach.
Megaptera novaeangliae	Humpback whale	E*	-	May occur in nearshore or offshore waters	Known currently	C	Occurs throughout the main seven-island chain January through April. Occurs in all nearshore and offshore waters to the 100 fathom line adjacent to or between O'ahu and Hawai'i.
Mesoplodon densirostris	Blainsville's whale	*	-	Most likely in deeper offshore waters	Known Currently	C**	Prefers deeper offshore waters. Has been sighted off coast of O'ahu. May be seen in offshore areas in waters adjacent to or between O'ahu and Hawai'i.
Orcinus orca	Killer whale	*	-	May occur in nearshore or offshore waters	Known Currently	C**	Occasionally seen, especially in the channels between the main islands and at the northwest island chain. May be incidentally sighted in nearshore or offshore waters adjacent to or between O'ahu and Hawai'i.
Peponocephala electra	Melon-headed whale	*	-	May occur in nearshore or offshore waters	Known Currently	C**	Occurs especially in the channels between the main islands and at the northwest island chain. May also occur in nearshore or offshore areas adjacent to or between O'ahu and Hawai'i.
Physeter macrocephalus	Sperm whale	E*	-	Most likely in deeper offshore waters	Known currently	C	Most common off the north and eastern shores of the main seven islands. May be sighted in waters adjacent to or between O'ahu and Hawai'i.
Pseudorca crassidens	False killer whale	*	-	May occur in nearshore or offshore waters	Known Currently	C**	Occasionally seen in the channels between the main islands. May be sighted in nearshore or offshore waters adjacent to or between O'ahu and Hawai'i.
Stennella attenuata	Spotted dolphin	*	-	Most likely in nearshore, leeward coastal waters	Known Currently	C	Common along the coastline, especially on the leeward sides of the island. Occurs in both nearshore or offshore areas in waters adjacent to or between O'ahu and Hawai'i.

Table 8-19
Sensitive Marine Wildlife Occurring or Potentially Occurring in Waters of PTA ROI *(continued)*

Scientific Name	Common Name	[1]Federal Status	[2]State Status	Habitat	Date Last Observed	Likelihood of Occurrence	Notes
S. coeruleoalba	Striped dolphin	*	-	May occur in nearshore or offshore waters	Known Currently	P	More strandings sighted than live individuals. May be sighted in nearshore or offshore waters adjacent to or between O'ahu and Hawai'i.
S. longirostris	Spinner dolphin	*	-	Most likely in nearshore, leeward coastal waters	Known Currently	C	Common along the coastlines. Occurs in nearshore or offshore areas in waters adjacent to O'ahu and Hawai'i.
Steno bredanensis	Rough toothed dolphin	*	-	Most likely in deeper offshore waters	Known Currently	C**	Prefers deeper offshore waters but has been sighted off coast of O'ahu. May be sighted in waters adjacent to or between O'ahu and Hawai'i.
Tursiops truncatus	Bottlenose dolphin	*	-	May occur in nearshore or offshore waters	Known Currently	C	Common along the coastlines. Occurs in nearshore or offshore areas in waters adjacent to or between O'ahu and Hawai'i. Also common offshore in project area waters.
Ziphius cavirostris	Cuvier's beaked whale	*	-	Most likely in deeper offshore waters	Known Currently	C**	Most common of the beaked whales in project area waters. Prefers deeper offshore waters but can be common in nearshore or offshore areas in waters adjacent to or between O'ahu and Hawai'i.
Sea Turtles							
Caretta caretta	Loggerhead turtle	T	-	In project area; prefers nearshore waters	Known currently	U	Considered uncommon in PTA ROI waters
Chelonia mydas	Green turtle	T	-	In project area; prefers nearshore waters	Known currently	C	Nests annually on Hawaiian beaches; common in nearshore areas of any of the main seven islands. Most abundant sea turtle in PTA ROI waters.
Dermochelys coriacea	Leatherback turtle	E	-	In project area; prefers offshore waters	Known currently	C	Primarily occurs over deep oceanic waters; sighted equally as frequently off any of the main seven islands. This species is expected in project area waters, especially along the north shores and in offshore waters.

Table 8-19
Sensitive Marine Wildlife Occurring or Potentially Occurring in Waters of PTA ROI *(continued)*

Scientific Name	Common Name	[1]Federal Status	[2]State Status	Habitat	Date Last Observed	Likelihood of Occurrence	Notes
Eretmochelys imbricata	Hawksbill turtle	E	-	In project area; prefers nearshore waters	Known currently	U	Considered uncommon; a small number nest on the Island of Hawaii
Lepidochelys olivacea	Olive ridley turtle	T	-	In project area; prefers offshore waters	Known currently	U	Infrequently seen in Hawaiian offshore waters

Sources: NMFS 2000a-bb; ONR 2000.

Status:

[1]Federal:
E = Endangered
* = Protected under MMPA
D = Depleted under the MMPA
CH = Critical habitat designated or proposed for designation
** = presence confirmed from aerial surveys but found at a distance offshore from the coastline, as discussed in Appendix I-1.

[2]State
/-/ = No Status

Likelihood of occurrence in the project site
C = Confirmed
P = Potentially may occur
U = Unlikely to occur

Whales and Dolphins Potentially Occurring in Hawaiian Waters of the PTA ROI

Non-ESA listed but MMPA-protected marine mammals considered to have the potential to be found in Hawaiian waters, or in waters of the PTA ROI, include the following:

- Bryde's whales (*Balaenoptera edeni*);
- Minke whales (*B. acutorostrata*);
- Pygmy sperm whales *(Kogia breviceps*);
- Dwarf sperm whales (*K. simus*);
- Killer whales (*Orcinus orcina*);
- False killer whales (*Pseudorca crassidens*);
- Pygmy killer whales (*Feresa attenuate*);
- Pilot whales (*Globicephala macrorhynchus*);
- Beaked whale species (*Mesoplodon* and *Ziphius* spp.);
- Baird's beaked whale (*Berardius bairdii*);
- Melon-headed whales (*Peponocephala electra*);
- Bottlenose dolphins (*Tursiops truncatus*);
- Spinner dolphins (*Stenella longirostris*);
- Rough-toothed dolphins (*Steno bredanenis*) ;
- Risso's dolphin (*Grampus griseus*);
- Striped dolphin (*Stenella coeruleoalba*);
- Common dolphin (*Delphinus delphis*); and
- Several species of spotted dolphins, the most common of which is *Stenella attenuata.*

The natural history of these species, as well as specific documented locations either in or near the PTA ROI (if known), are described in Appendix I-1.

Sensitive Species

A list of all sensitive vegetation and wildlife and any critical habitat found in the region, according to USFWS and DLNR records, is found in Tables 8-19 through 8-21. An assessment of the likelihood of a species occurring on PTA was made where possible, based on the habitat requirements and geographic distribution of the species, existing on-site habitat quality, and the results of biological surveys of PTA. The Army has undergone ESA Section 7 consultation with USFWS for previous Army training and actions that would affect listed species such as the palila and its federally designated critical habitat (USFWS 1978, USFWS 1983a) as well as other listed species on the premises (USFWS 1986b). Natural history descriptions of sensitive species with the potential to occur in the ROI, and specific locations if known, are in Appendix I-1 (Recovery Plans I-1a; Plants I-1b; Wildlife I-1c; Critical Habitat I-1d).

Sensitive Plant Species

The Army has funded botanical surveys on PTA since 1988, though other surveys date as far back as 1888 (USARHAW and 25th ID[L] 2001b). Approximately 38 percent of the plants found on PTA are indigenous or endemic. Endangered species, threatened species, and species of concern (all according to federal guidelines) are found on PTA, as well as a new species *(Tetramolopium* unnamed sp.*)* that could be included on the endangered species list as it is known only from three small populations on PTA. State and locally regulated rare species are included in this report, along with species that have experienced rapid population decline or whose habitat has markedly decreased in recent years. Table 8-20 lists sensitive plant species and their potential to occur in the PTA ROI. Documented occurrences of sensitive plant species in the PTA ROI are shown in Figure 8-34.

Sensitive Wildlife Species

The following discussion includes a profile of only those sensitive wildlife species considered likely to be found in the project area. This information is based primarily on information from the PTA INRMP (USARHAW and 25th ID[L] 2001b, R. M. Towill Corp. 1997c); special species wildlife information was based on surveys conducted on PTA. In 1990 Dr. Freed conducted bird and mammal surveys at PTA (Freed 1991). Later surveys include David's two endangered and threatened species surveys conducted along designated palila critical habitat (David 1995), Cooper's studies of endangered seabirds and Hawaiian hoary bat (Cooper et al. 1996), and the HINHP's arthropod inventory (USGS 2001b). Annual avian surveys, with a focus on sensitive species, have been conducted on PTA since 1997 (HINHP 1998; Schnell et al. 1998; Schnell et al. 1999). The latest USFWS and survey information on species and habitat in the SBCT ROI has been incorporated into this evaluation of biological resources.

Nineteen sensitive species have been determined to have the potential to occur within the PTA ROI (USARHAW and 25th ID[L] 2001b). Information regarding the locations of sensitive species on PTA is based on previous analyses of PTA natural resources (USARHAW and 25th ID[L] 2001b; R. M. Towill Corp. 1997c; HINHP 2002). The majority of these species observations have been on the west and northwest of PTA where the BSAs are located. Little information is known as to species occurrences within the impact area because zoological surveys have not been conducted due to safety hazards. Table 8-21 lists sensitive terrestrial wildlife and their potential for occurring on the island of Hawai'i and Figure 8-35 shows the locations of sensitive terrestrial wildlife documented on the PTA ROI.

Marine Wildlife

Six species of endangered whales occur in the Pacific tropical waters of Hawai'i. Of these, only one is considered likely to occur in the PTA ROI waters. This is the humpback whale *(Megaptera novaeangliae).* The other listed species are the fin *(Balaenoptera physalus),* blue *(Balaenoptera musculus),* sei *(Balaenoptera borealis),* and pacific right *(Eubalaena glacialis);* and the sperm whale *(Physeter macrocephalus).*

Table 8-20
Sensitive Plant Species Occurring on or Potentially Occurring at PTA ROI

Scientific Name	Hawaiian Name/Common Name	Federal Status[1]	State[2]/Global Status[3]	Habitat	Date Last Surveyed	Likelihood of Occurrence
Asplenium fragile var. *insulare*	-/fragile fern, lola	E, CH	-/-	Dry forest, subalpine shrubland, barren lava, and lava tubes	1999	C
Chamaesyce olowaluana	ʻakoko, kōkōmālei/ Maui milk tree	SOC	-/G2	Multiple tree and shrubland types on PTA	1999	C
Cystopteris douglasii	-/-	SOC	-/G2	Myoporum forest and shrubland	1999	C
Dubautia arborea	naʻenaʻe/-	SOC	-/-	Subalpine shrub and woodlands and alpine desert	1999	C
Eragrostis deflexa	Kalamalo/bent lovegrass	SOC	-/G1	Multiple treeland and shrubland habitats on PTA	1999	C
Exocarpos gaudichaudii	heau/whisk broom sandalwood	SOC	-/G1	Multiple treeland communities associated with *Metrosideros*	1999	C
Festuca hawaiiensis	-/Hawaiian fescue	C	-/-G1	Multiple treeland and shrubland habitats on PTA	1999	C
Haplostachys haplostachya	honohono/Hawaiian mint	E	-/G1	Multiple treeland and shrubland habitats on PTA, though with very small populations	2002	C
Hedyotis coriacea	Kioʻele/-	E, CH	-/G1	*Metrosideros* treeland communities	1999	C
Hesperocnide sandwicensis	-/-	C	-/G1	All native vegetation communities at PTA	1999	C
Isodendrion hosakae	aupauka/-	E	-/-	Several dry shrubland habitats	2002	C
Lipochaeta venosa	nehe/-	E	-/-	Dry shrubland	1999	C
Melicope hawaiensis	manena/-	SOC	-/G2	*Metrosideros* treeland and *Dodonaea* shrubland	1999	P
Neraudia ovata	maʻaloa, maʻoloa/ spotted nettle brush	E, CH	-/G1	*Metrosideros* treeland and *Myoporum* shrubland communities	1999	C
Portulaca sclerocarpa	ʻihi, poe/hard fruit purslane	E, CH	-/G1	Barren lava and *Metrosideros* treeland communities	1999	C
P. villosa	-/-	-	-/G1	*Metrosideros* treeland communities	1999	P
Schiedea hawaiiensis	maʻoliʻoli/-	SOC	-/-	Subalpine dry forests	1999	C
Silene hawaiiensis	-/Hawaiian catchfly	T, CH	-/G1	Multiple tree, shrub, and grasslands and on barren lava	2002	C
S. lanceolata	-/lanceleaf catchfly	E, CH	-/G1	Multiple tree, shrub, and grasslands and in dry habitats	1999	C

Table 8-20
Sensitive Plant Species Occurring on or Potentially Occurring at PTA ROI *(continued)*

Scientific Name	Hawaiian Name/Common Name	Federal Status[1]	State[2]/Global Status[3]	Habitat	Date Last Observed	Likelihood of Occurrence
Solanum incompletum	pōpolo kū mai/-	E, CH	-/GH	Sparse *Metrosideros* treelands and *Myoporum* shrublands	1997	C
Spermolepis hawaiiensis	-/Hawaiian parsley	E, CH	-/G1	Multiple tree, shrub, and grasslands and in dry habitats	1999	C
Stenogyne angustifolia	Ma'ohi'ohi/creeping mint	E	-/G1	Multiple tree and shrublands and on barren lava	2002	C
Tetramolopium arenarium var. *arenarium*	-/Mauna Kea pāmakani	E, CH	-/G1	*Dodonaea* mixed shrubland	1999	C
T. unnamed sp. *leptophyllum* var. *leptophyllum*	-/narrow leaf pāmakani	-	-/G1	Multiple tree and shrubland communities	1999	C
Vigna o-wahuensis	mohihihi/-	E,CH	-/-	Lowland shrublands, dry to moist	2002	C
Zanthoxylum hawaiiense	hea'e, a'e/Hawaiian yellow wood	E, CH	-/G1	*Metrosideros* dominates dry and moist forests and on barren lava	2002	C

Sources: USFWS 2002b; USARHAW and 25th ID[L] 2001b; HINHP 2002; Shaw 1997

Status:

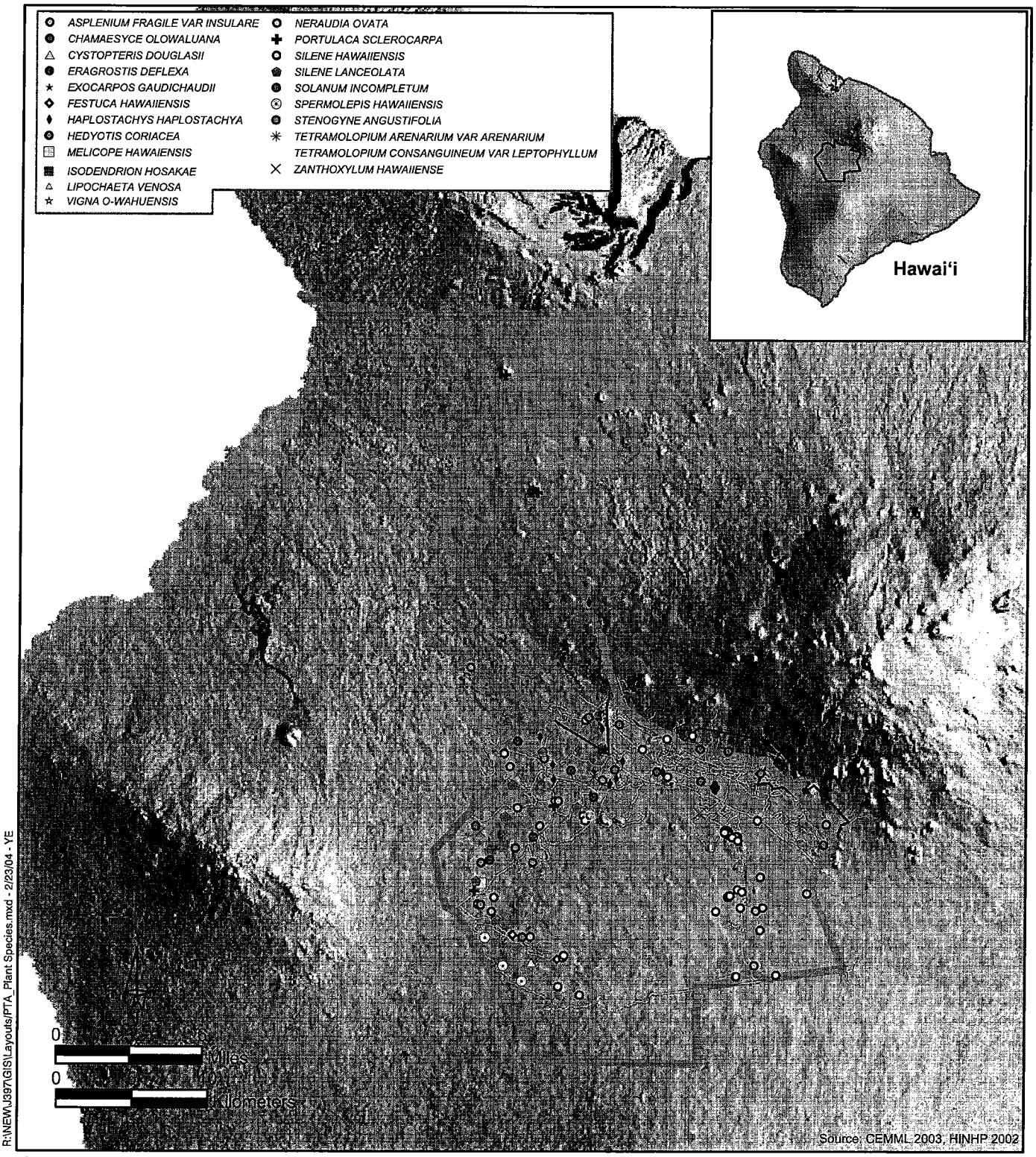
[1]Federal:
E = Endangered
T = Threatened
SOC = Species of concern
C = Candidate species for listing
CH = Critical habitat designated

[3]Heritage Global Rank:

G1 = Species critically imperiled globally (typically 1-5 current occurrences)
G2 = Species imperiled globally (typically 6-10 current occurrences)
GH = Species known only from historical occurrences
/-/ = No Status

[2]State
/-/ = No Status

Likelihood of occurrence on the project site
C = Confirmed
P = Potentially may occur
U = Unlikely to occur



There are 15 federally listed plants recorded within the Pōhakuloa Training Area Region of Influence

Legend

Pōhakuloa Training Area Boundary

Region of Influence

Sensitive Plant Species in the Pōhakuloa Training Area Terrestrial Biological Region of Influence

Island of Hawai'i, Hawai'i

Figure 8-34

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